

**Patent Claims:**

1. A method of enhancing the specificity of a plant lipoxygenase for position 11 of arachidonic acid, comprising the step of
  - exchanging at least one amino acid in a wild type lipoxygenase.
2. The method according to claim 1, **characterized in** that the amino acid exchange(s) is(are) carried out in the region of the amino acid position 570 to 10 581 of potato tuber lipoxygenase or a corresponding position in a lipoxygenase of another plant species.
3. The method according to claim 2, **characterized in** that the exchange is carried out at position 576 of the potato tuber lipoxygenase or at a 15 corresponding position in the lipoxygenase of another plant.
4. The method according to claim 3, **characterized in** that the exchange at position 576 leads to the presence of a Phe residue in the mutant.
- 20 5. The method according to any one of claims 1 to 4, **characterized in** that the amino acid exchange is effected by directed mutagenesis.
6. Lipoxygenase obtainable by a method according to any one of claims 1 to 5.
- 25 7. Nucleic acid coding for a lipoxygenase according to claim 6.
8. Vector containing a nucleic acid according to claim 7.
- 30 9. Cell containing a nucleic acid according to claim 7 and/or a vector according to claim 8.
10. Plant or plant part comprising a host cell according to claim 9.

11. A method for producing 11-perhydroxy arachidonic acid or the reduced 11-hydroxy derivative, comprising the step of
  - converting arachidonic acid with a lipoxygenase according to claim 6 and, optionally, reducing the perhydroxy compound obtained to hydroxy compound.
- 5 12. Use of a lipoxygenase according to claim 6 for producing 11-perhydroxy arachidonic acid and/or 11-hydroxy arachidonic acid.
- 10 13. Arachidonic acid derivative containing a hydroperoxy group or a hydroxy group at position 11.